

document reflects that belief of scientists working in the Rangelands Programme that, after 30 years of research, it was just not good enough for results to be languishing in scientific journals when their implications for sound pastoral and environmental management were manifest.

The reception of the document was, overall, positive. We distributed 2 000 copies to a wide variety of people and agencies, and inquiries from country people in particular were intense. The first print run has been exhausted, and another is just being posted out. There were some negative responses, however. The National Farmers Federation attacked CSIRO for releasing a "policy" document, arguing that the organization has no place in setting policy. Clearly, the Federation disagreed strongly with the document's forthright attack on drought relief for pastoralists in the rangelands. I don't believe that the hostile reception from some quarters will prevent CSIRO from releasing other documents on similar topics in the future.

It is because of this experience that I must disagree slightly with Recher (1990) on one point, and that concerns his pessimistic tone. In the case I have described, Australian scientists were not silent or silenced. Like scientists elsewhere in the world, we are still groping towards the best ways to communicate, but the process

has begun. To those in the thick of a battle to mobilize popular opinion the pace of change frequently seems far too slow, but from an objective stance this conclusion is not always correct. My conversations with taxi-drivers — those useful barometers of public opinion — around Australia over the past year or so convince me that important shifts in environmental perceptions are taking place at an astounding rate. We might believe the media on this score too. I wouldn't pretend that *everything* is rosy, but I'm not yet ready to give way to despair. Let us hope that Harry Recher doesn't either.

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Wildlife conservation in Australia: the view of a marine ecologist

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While supporting Recher (1990), I would like to expand on the points made by him on the needs to conserve and manage Australian estuarine ecosystems, in particular estuarine wetlands (saltmarsh, mangroves and seagrass beds).

Successive Federal and State Governments (e.g., 1981 House of Representatives Standing Committee on Environment and Conservation; New South Wales Government submission to the Inquiry to Review the Protection of the Australian Coastal Environment by the House of Representatives Standing Committee of Environment, Recreation and the Arts, Sydney, October 1989, two of at least seven Federal enquiries; New South Wales Government Inquiry into Coastal Management currently being prepared by New South Wales Cabinet Office, due for release June 1990; New South Wales Legislative Council Standing Committee on State Development-Coastal Developments in New South Wales currently underway etc.) have commissioned enquiries into

coastal zone management and development. In addition Coastal Management Conferences have been initiated (for example The National Conference on Coastal Management, October, 1986). It appears that little action has been undertaken to resolve the problems highlighted by each of these enquiries or Conferences. Although the recent creation of the Resource Assessment Commission and their decision to set up an enquiry into the coastal zone headed by Justice Stewart by the Australian Government may be in response to the pressing need to manage our coastal resources. One could suggest that the most common response to these enquiries is to suggest yet another enquiry.

In New South Wales legislation (Environmental Planning and Assessment Act 1979; and SEPP No. 14 which covers the estuarine wetlands within the state which are recognized as being in good condition) does exist to protect and manage our scattered wetlands. The SEPP No. 14 makes it mandatory for an EIS to be prepared

for any development proposal in which wetlands designated under this policy may be affected. Yet the will and the awareness of the need to manage our wetlands is apparently lacking at all levels of government. Too often other factors are considered more important than the retention of the wetlands and the development is allowed.

I believe that this lack of willingness to protect and manage wetlands is in part at least, due to the failure of scientists to convince the community and politicians at all levels of government of the concept that estuarine wetlands are a national renewable resource. This resource if properly managed will continue to provide the detritus on which estuarine ecosystems are driven, provide nursery and breeding grounds for many species, and maintain river banks (AMSA 1977). However, these estuarine wetlands are not necessarily contiguous areas, but are scattered along our coast, and even within a river system they can be represented by isolated pockets of wetlands. Wetlands also consist of a variety of habitats which straddle the land/sea interface. Salt marshes and mangroves are always visible but seagrass beds may be continuously submerged and never seen by the public. These habitats change their boundaries over time especially in areas of heavy siltation or erosion. The concept of managing "mobile" and non-contiguous areas as a national or state resource is apparently difficult for planners and the scientists have not worked closely enough with them to develop the appropriate strategies for management. The straddling of wetlands over the land/sea interface also poses problems as to which Government Agency is responsible for the management and this will vary depending on whether the wetlands are above or below low water mark. It is obvious that these estuarine wetlands should be managed as an entity and in sympathy with the management of the catchment area and the entire estuary. The current multiplicity of agencies responsible for this management makes effective management almost impossible. For example, Recher (1986) states that the Hawkesbury River is regulated by 14 shire councils and 16 state government departments and authorities. In addition there should be an overall strategy for managing all estuarine areas in New South Wales bearing in mind the biological, geological and physical properties of the estuaries (AMSA 1977).

With the projected population figures for the New South Wales coast of 3 069 100 in 1991 to 3 655 200 in 2011 (Australian Bureau of Statistics) it is obvious that our coastal wetlands are in danger of becoming an "endangered species". If these habitats are conserved and properly managed they can continue to support our estuarine fisheries which were worth \$40 million in 1986 in New South Wales and this does not include the tourist

and recreational values of estuaries. Thus estuarine wetland conservation and management makes sound economic sense as well as retaining the diversity of habitat and biota that occurs within such habitats.

Another point which I would like to make, which is not just relevant to estuarine ecosystems but to all ecosystems is a deficiency in the current New South Wales EIS legislation. Currently an EIS provides details of the likely impact if any, of the proposed development on the relevant ecosystem. Should the development proceed, there is no procedure for a follow up survey to investigate whether any impact on the ecosystem did in fact occur. This follow up survey would enable a data bank to be established on which subsequent proposals could draw upon. For example numerous residential canal estates have been built along the New South Wales coast. Are some designs preferable to others in terms of water circulation and the establishment of benthic communities within the canals? We just do not know. The cost of the follow up survey could be included in the cost of the permit issued to allow the development to proceed. Such a precedence already exists within Australia. The Great Barrier Reef Marine Park Authority requires developers planning to build structures on the reef to fund monitoring programmes before and after the development. The developer must also pay a bond before the development can proceed and this may be used to rectify any environmental damage caused by the development. Similar schemes also operate within the mining industry. Obviously this monitoring would have to be regulated and evaluated to ensure that the data collected were scientifically useful.

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